REMARKS

Claims 1-46 are pending in the application. Claims 1-46 stand rejected. Claim 1 stands objected to and has been corrected as Examiner requested.

Applicant respectfully requests reconsideration in view of the foregoing amendments and the remarks hereinbelow.

Rejection of Claims under 35 U.S.C. 103:

Claims 1, 2, 5-14, 21-23 and 26-46 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. (US 5,877,772) in view of Sage et al. (US 5,672,840) and further in view of Peters (US 5,715,334). It is the Applicants' position that the Office Action has failed to establish a prima facie case of obviousness as required under 35 U.S.C. 103(a) on grounds that the rejection has failed to properly demonstrate that the elements of the claim are known in the art or would be obvious to one of skill in the art in that the references are not properly combinable, in that they teach apart, and that even if the references were properly combinable, one of ordinary skill in the art would not combine the references in the manner taught.

I. Claims 1 - 12 Are Allowable Over the Cited Combination

1. Claim 1 is allowable over the cited Combination

A. A Prima Facie Case of Obviousness Cannot Be Met Because Nomura et al. Teaches Away From What Is Claimed

Nomura et al. describes a graphic processing apparatus that allows a user to specify image appearance by automatically expressing differences in color and hatching attributes. Specifically, Nomura et al. describes a graphic processing apparatus which is capable of controlling the highlighting states of regions of an image by providing differences in color and hatching densities and the like to the regions in accordance with the area and the degree of importance of the region. This allows high quality coloring and hatching to be easily performed. The graphic processing apparatus has a memory for temporarily storing the image; a region extractor that extracts a plurality of regions to be painted with a color from the stored image; a region color determiner that determines region colors to be applied to the extracted regions; and an output image generator that generates an image having the color attributes applied to the extracted regions of the stored image. The region colors are differentiated from each other by differences in color attributes from among the regions in accordance with the areas of the

individual regions each to be painted with a color. When used in a digital photocopier environment, an image that is scanned and stored in memory can have regions, selected by a user through a graphical user interface, colored or hatched, the colors/hatching applied at the same time to the regions and the modified image printed.

Nomura et al. provides only one structure to allow a user to designate a region. This structure is an "edit-region-request receiving unit 6." This is discussed in Col. 13, lines 1-21 as follows:

> For example, when it is desired to paint a region of a text picture in the manuscript read in this way with a color, a text picture to be edited is displayed on a window for specifying regions each to be painted with a color shown in FIG. 3. The user then makes a request to paint regions with colors by means of a pointing device. The edit-region-request receiving unit 6 carries out processing to receive the coloring request made by the user.
>
> The edit-region-request receiving unit 6 is a system element which receives a request to paint a region on the manuscript with a color from the user (that is, the composer of the text). An example of a window 30 for specifying regions each to be painted with a color to the edit-region-request receiving unit 6 is shown in FIG. 3. When the user specifies a region to be painted with a color in the manuscript, the window 30 for specifying a region to be painted with a color is displayed on the screen. A scanned picture 31 is displayed on the window 30. Then, regions 32 to 37 to undergo coloring/editing are specified by a pointing cursor 38 which is moved by operating a mouse. To put it in detail, the edit-region-request receiving unit 6 displays the scanned picture 31 stored temporarily in the text-picture memory unit 11 on the window 30 for specifying regions each to be painted with a color and the user moves the pointing cursor 38 on the screen to the regions 32 to 37 of the scanned picture 31 by operating a pointing device such as a mouse or a touch pen. The user can make a request to select one region or a plurality of regions from the regions 32 to 37 to be edited.

Thus, Nomura et al. merely discloses the use of a directional input system- a pointing device which can be a cursor which is moved by a mouse or a pen. Accordingly, Nomura et al. teaches away from the use of a non-directional input as claimed and therefore, Nomura et al. cannot be used in combination references that show with non-directional input devices.

B. *A Prima Facie Case Of Obviousness Cannot Be Met Because Sage et al. Teaches Away from What is Claimed*

The Office Action admits at Page 3, that Nomura et al. admittedly does not provide (3) a user input system adapted to generate a non-directional signal in response to a user input action..."

However, the Office Action suggests that Sage et al. teaches this limitation. Sage et al. provides an automatically oriented computer display for a targeting computer used in connection with a shoulder-fired missile launcher. A computer operator member of an air defense team will read a computer display from a handheld targeting computer so as to give directional and distance information of approaching aircraft. (See Sage et al. Abstract) According to Sage et al., what is needed is a system that causes the computer display to be automatically oriented to a particular direction as the computer operator moves and turns about his position. It is therefore an object of Sage et al. to provide such a system. (Sage et al. at Col. 2, lines 39-48). Sage et al. solves this problem by incorporating an electronic compass in the computer display so that the directional orientation of air defense radar image on the display changes in lock step with the directional movements of the user. Thus, Sage et al. clearly discloses a system that is intended to, and that apparently does, detect a directional input form a user i.e., an orientation of the computer display in a particular direction and that selects a directional orientation of the image presented thereon based upon the directional input.

In the Office action it is indicated that Sage et al.

> *"teach the limitation of the claim. In (col. 3, lines 5-10), Sage et al., teach about a directional signal to redraw an image on a display. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to change the directional signal as taught by Sage et al. to a user input system adapted to generate a non-directional signal in response to a user input action in order for the computer to provide directional information for the display change. "*

Accordingly, as best understood, the Office Action appears to take the position that a reference that explicitly teaches the use of a directional input to select a directional orientation and that extensively discusses the advantages of providing such a directional input would be read by one of skill in the art to do

something very different: namely to provide a user interface that receives a non-directional user input signal and that converts this non-directional user input signal into a directional user input signal.

Sage et al. does not disclose any embodiment of this type. Sage et al. also teaches away from such approaches. Specifically, Sage et al. provides a user input system that can automatically orient a map presented on a display as a user adjusts the direction of display.

Further, it will also be appreciated that because Sage et al. describes a user interface in the context of providing directional input for *control system for a shoulder fired missile*, it is highly unlikely that Sage et al. or one of ordinary skill in the art reading Sage et al. would be inclined to change the system so that guidance input for the display must be made using non-directional input as such non-directional input would be largely counter intuitive and substantially less valuable on the battlefield. Further, one cannot imagine a less intuitive system for selecting the directional orientation of a targeting computer than requiring the user to make a non-directional user input.

Thus, not only does Sage et al. teach away from the use of a non-directional input signal, it destroys the Sage et al. reference to combine Sage et al. in any way in which a user interface is not automatically oriented based upon a directional input.

Accordingly, the prima facie case of obviousness has not be met in that Sage et al. do not describe the claimed elements, in that Sage et al. teach away from the use of non-directional inputs and in that it destroys the Sage et al. reference to modify or to combine Sage et al. so that it uses a non-directional input.

Finally, the prima facie case of obviousness has not been met because the motivation to modify Sage et al. is to use a non-directional input to generate *a non-directional signal in response to a user input action in order for the computer to provide directional information for the display change.* However, nothing in the claim suggests that directional information is used at any point. Instead, claim 1 clearly indicates that image portions are selected based upon the non-directional input. The claim and the specification are devoid of the steps required in the process suggested in the Office Action but not taught by Sage et al., namely the process of converting a non-directional input into a directional input. Thus, even

if a combination were made in accordance with the stated motivation of the combination, it would still not read on the claim 1, in that it requires two steps not claimed therein – converting a non-directional input into a directional input and using the directional input.

C. A Prima Facie Case of Obviousness Cannot Be Met Because Peters does not teach the controller limitations of claim 1.

The Office Action explicitly admits that the combination of Nomura et al. and Sage et al. fails to teach:

> (4) a controller ~~adapted~~ adapted to determine a set of portions of the original image each portion including less than all of the original image and with the set having at least one portion that is non-central with respect to the original image and to successively designate a different one of a set of portions of the original image in response to each non-directional signal and adapted to cause the display to present a portion evaluation image showing the currently designated portion of the original image and to determine an area of importance in the original image based upon the currently designated portion; wherein each portion evaluation image shows the currently designated portion having a magnification, that is greater than the magnification that the currently designated portion has when the currently designated portion is presented as a part of the original image.

However, the Office Action contends that Peters teaches this limitation. Peters describes, generally, an "image information enhancement" technique for processing digital images, wherein enhancement of image detail contrast is accomplished by adding a differential hysteresis pattern to a digital image. Specifically, the Office Action contends that each of the elements of the limitation can be found in Peters at Col. 15, lines 40-45. Lines 40-45 are a part of a larger statement beginning on line 28 and continuing to line 62 which state as follows:

> Image evaluation of microscopy, radiological and other similar data requires that all image details are made to be identifiable by visual pattern recognition while maintaining the spatial relation of details within the overall image. This implies that low intensity details be contrast enhanced by a factor of 10-100 and that the smallest spatial details be enlarged by a factor of 10-20. However, for correlative image component evaluation, only three image processing tasks are required.
>
> 1. Detail contrast enhancement in full frame images;
> 2. Digital enlargements;
> 3. Noise management.

> In general, the evaluation of an image's information content will require a sequence of image processing steps: first, in the full frame image after contrast enhancement, details will be recognized and cross correlated with image features; then interesting, enhanced details will be enlarged and analyzed; and finally, distracting noise may be reduced. If the image contains a high noise level, the noise is first reduced to a level at which the detail information can be easily recognized. However, such image processing must fulfill some stringent conditions in order to be effective and practical. The image processing techniques must avoid processing artifacts inherent to most common image enhancement procedures which distort the spatial and most of the intensity characteristics of details. Only pixel accurate enhancement techniques promote closer visual inspection by digital enlargement. In addition, the processing must be fast (close to real time) in order not to disturb the visual recognition process; it must be able to automatically accommodate all images independent of their size, depth and content, it must be exhaustive and objective to avoid missing any existing detail; and it must be simple and without any other input than a single factor, i.e., a "visibility enhancement factor". (Emphasis supplied)

These lines provide a statement of need as to what is required to prepare an image for use in evaluating an image's information content and further discuss the use of image processing techniques to achieve the goal of making images more understandable to a viewer. Further, these lines clearly indicate that all images must be accommodated and that the processing "must be exhaustive and objective to avoid missing any existing detail." Since using the image processing technique that is claimed involves generating evaluation images that are drawn from a determined set of portions of the original image including less than all of the original image, it can clearly be said that whatever is described in these lines of Peters, it is not forming new images that contain only portions of the original image as such images necessarily miss existing detail in that they specifically exclude portions of the original image. This point is made clear by further analysis of Peters.

Peters provides a method for enhancing an existing image to bring out additional detail in the image so that a user can better or more accurately interpret what is shown within a medical image or the like which might contain important information in forms that are difficult to detect in an image that has not been processed in the manner described in Peters. In Peters, the differential hysteresis image processing utilizes the persistence of intensity variations (i.e., hysteresis) as

means for data reduction and image detail contrast enhancement. Image hysteresis is determined by a hysteresis cursor of an interactively chosen hysteresis range and differential hysteresis patterns are generated as a difference between hysteresis images. (See Peters Abstract) Grossly stated, therefore Peters provides this enhancement by smoothing out high frequency noise and applying detail enhancement to the image.

Thus, what is actually disclosed by Peters is a method for modifying the image that has two goals: removing noise from the image and enhancing detail so that when the image is enlarged for human visual analysis (at some later time) it will be easier to identify detail in the image. In fact, it can be argued that the central purpose of Peters is to ensure that features are not lost during enlargement, thus, special processing is done to ensure that when an image is magnified, the magnification process will not mask certain image portions.

This is clear from a review of the implement of the image enhancement technique of Peters which is described as follows at Col. 17, lines 30-42 of Peters.

> *B. Implementation of the Image Information Enhancement Technique*
>
> The information extraction program in accordance with this invention creates an output image from two smoothed input images (or the original data set and one smoothed image). The smoothed images are preferably generated by the two-dimensional hysteresis smoothing program described above using two different cursor widths (but alternatively may be generated by a different pixel-accurate smoothing technique). The two input images must have the same number of rows and columns. The detail extraction subtracts the most smoothed image from the least smoothed image and then does linear contrast stretching on the result.

Apparently, then the output of this process is one image. This image is formed by the subtraction of two images Such images are stated to have the same number of rows and columns.

Specifically, the Applicants direct the examiner to Col. 19, lines 44-62 which state as follows:

> The novel detail enhancement technique of this invention utilizes two-dimensional hysteresis processing for several unique enhancement purposes which are required for the accurate enhancement of image details and which are not addressed either by the noise management application of the technique or by any other commonly used processing techniques: pixel accurate extraction of spatial details with a defined and limited intensity range, and image-accurate scaling

of detail intensity and determining of a single interactively defined output parameter for the enhancement. This image accurate "enhancement parameter" is chosen independently from the image content only in relation to the desired extent of detail enhancement. The detail enhancement filter has fundamental advantages over the conventional spatial processing principles (Oho filter, Sobel filter or homomorphic filters) since it uses a different, pixel accurate intensity processing principles for the selection, extraction and enhancement and which are independent of the image content.

Significantly, the scaling of the resulting differential images to full display intensity range produces a differential hysteresis image having unique properties, i.e., they represent visually discrete differential intensity pattern of additive character. From most images, irrespectively of their original, only a limited number of basic visual patterns can be extracted which represent all the contrast information present in the data, e.g., a CCD (charge coupled device) video portrait image, atomic force microscopy image, which, e.g., provides data in the 14-bit range, a CT image (computerized tomography), which, e.g., provides data in the 11-bit range, and a radiogram, which, e.g., provides data in the 12-bit range.

The advantages of this process when the image is enlarged or fully scaled are further discussed in greater detail at col. 30, lines 41-60.

Most instrumental precision information of maximum contrast resolution is found only in a fraction of the data's intensity range and is often too low to be visually recognizable. This pertinent information can be made visible as enhanced distinct images or can be contrast enhanced within the original images by adding the extracted differential hysteresis pattern components to the original images. The enhancement dramatically improves the image resolution of any imaging instrument and guaranteed maximum efficacy in image evaluation. For the first time and without requiring special knowledge of digital image processing or computer operation, digital image processing, the present invention provides an interactive process for objective and exhaustive visual real-time access to any level of image resolution including the maximum sensor resolution using only one single parameter (i.e., the differential hysteresis range). Importantly, this process allows visualization of any image at the resolution level of the image sensor, rather than the eye, extending the "visual recognition level" to the acquisition level of the imaging device.

Finally, the cited lines of Peters do not appear to suggest a controller that is adapted:

A. to determine a set of portions of the original image each portion including less than all of the original image and with the set having at least one portion that is non-central with respect to the original image;

B. to successively designate a different one of a set of portions of the original image in response to each non-directional signal;

C. to cause the display to present a portion evaluation image showing the currently designated portion of the original image;

D. to determine an area of importance in the original image based upon the currently designated portion; and

E. wherein each portion evaluation image shows the currently designated portion having a magnification, that is greater than the magnification that the currently designated portion has when the currently designated portion is presented as a part of the original image.

Accordingly, it is respectfully submitted that Peters does not support the prima facie case for obviousness as Peters clearly discloses a system for enhancing an image while preserving the information within an image, which teaches away from claim 1 which provides evaluation images containing portions of the image that do not include all of the image information in the image. Further, it is respectfully submitted that Peters does not teach any of the other of the elements for which it is cited and accordingly the stated grounds for rejection fails to correctly show what is known in the prior art.

It is further respectfully submitted that the prima facie case for obviousness has not been made because the references are not properly combinable. Sage et al. provides a system that automatically adjusts based upon a directional input. Peters however, provides a method for changing the way in which full image enhancement is performed – a method that uses <u>only</u> a visibility enhancement factor as an input. Thus, there is no motivation to combine these references.

It is also respectfully submitted that the prima facie case for obviousness fails in that the combination of a display and a source of images (Nomura et al.), a directional input used for image directional orientation purposes (Sage et al.) and an image enhancement regime (Peters) even if properly combined provides a method for automatically enhancing an image to improve the details in the image

and automatically orienting the displayed image relative to a directional input provided by a user but teaches one of skill in the art nothing about the use of a non-directional input and further offers no motivation for one of skill in the art to seek a solution using a non-directional input approach.

Accordingly, claim 1, and all claims that depend therefrom are believed to be in a condition for allowance over the cited combination of references.

To the extent that the Examiner maintains the rejection based at least upon Peters the Applicants respectfully request that the Examiner identify exactly where any of the controller related claim elements identified only for use herein as elements A – E can be found in Peters in order to clarify matters for appeal.

2. Claim 2

Claim 2 has been amended to make explicit that which was implicit in the claim, namely that the controller is further adapted to generate area of importance data <u>defining the portion of the original image determined to be the area of importance</u> based upon <u>the</u> determined area of importance and to associate the area of importance data with the original image <u>so that a person having access to the original image can also determine which area of the image was determined to be the area of importance.</u>

Nomura et al. does not provide for such a result. Nomura et al. describes determining a plurality of regions in a scanned image and providing for each region a color designation reflecting a color that the region is to be "painted" a particular color when a print is made of the scanned image. Specifically, it is an object of Nomura et al. to provide a graphic processing apparatus which is capable of controlling the highlighting state of a region by providing differences in color and hatching densities and the like in accordance with the area and the degree of importance. (Nomura et al., Summary of the Invention) To accomplish this, Nomura et al. provides an importance-degree determiner that determines degrees of indicated importance for each of the plurality of selected regions, wherein, for each of the plurality of selected regions of the output image, the appearance of that selected region is based on the degree of indicated importance of that selected region. (Nomura et al. Claim 10)

In this regard, it will be understood that Nomura et al. contemplates designating more than one region of an image for painting a particular color. It will also be understood that Nomura et al. further contemplates a situation where different regions are designated that overlap. To the extent that such different regions overlap, a conflict can arise when the user of Nomura et al. instructs the system to paint each of the regions a different color. Thus, a prioritization scheme is provided that allows a user to associate a "degree of importance" that designates the color associated with a region as being one of a low, medium or high degree of importance. This allows the Nomura et al. system to choose a color to be printed in this area that corresponds to the intent of the author. The image is printed in accordance with the selections. Nomura et al. does not however, describe the use of a system wherein even this degree of importance data is stored.

This however, is vastly different from what was implicit and is now explicitly stated in Claim 2, namely that the area of importance data is data that defines the selected area of importance and that such data is associated with the image so that it can be accessed later by a person who has access to the original image data. In particular, claim 2 differs significantly from Nomura et al. in three central respects:

1. Nomura et al. does not consider the importance of the area in the image per se, but rather considers that the region is to be painted a particular color. The region may be of negligible importance such as a border.

2. In Nomura et al. it is not the importance of the region that is indicated but rather the relative importance of the color to be painted in the region as compared to any other color region that might intersect with the color of the particular region.

3. Nomura et al. does not associate any data with the original image that allows an area of importance to be determined by a later user.

Accordingly, in Nomura et al. the word "importance" is used. However, this word is used as a means to guide a printer as to what color to print when two regions are designated that at least in part overlap.

3. Claims 3 – 6

Claims 3 and 4, stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. (US 5,877,772) in view of Sage et al. (US 5,672,840) and further in view of Peters (US 5,715,334) as applied to claims 1, 2, above and further in view of Phillips (US 6,504,552).

To the extent that these claims have been rejected in view of the above-cited combination of Nomura et al., Sage et al. and Peters the Applicants respectfully reassert the arguments presented above. Further, the Applicants note that Phillips has been cited for the proposition that Philips shows a step of storing area of importance metadata in association with an image. Specifically, Philips at Col. 3, lines 12-18 is cited on this point. These lines state as follows:

> In one embodiment, such record of effects editing is a data structure of metadata. In one implementation, the metadata includes resolution-independent positional information with respect to the effects, descriptive information with respect to the effects, and source frame information. In one aspect, such descriptive information, positional information, or both, is pixel-based.

It will be appreciated that the term area of importance is not used. Nor does this term appear anywhere in Philips. Philips instead describes storing data reflecting a series of edits as metadata. However, claim 1 does not claim making any edits to an image.

Philips and Nomura et al. in combination would teach away from the invention as Nomura et al. shows the concept of adding painting instructions (edits) to an image and in combination with Philips might disclose storing a record of the editing instructions. However, in claim 3, there is simply no teaching of an edit being made to the image. Rather, in claim 3, segments of the image are previewed using a non-directional input, an area of importance is determined from this and the area of importance is stored.

The technical effect of claim 3 is that the common user action of verifying that the appearance of a subsection of a captured image is made simpler in that directional inputs are not required. Further, an area of interest is identified that follows with the image. To force the user to identify an area of the image using the editing type area designations of Nomura et al, and Philips is therefore not consistent with what is claimed claim 3 and is inconsistent with the technical effect of what is claimed.

Further, Philips discloses the use of a mouse or other positioning scheme to position a cursor relative to the image displayed. Thus, Philips provides further support for the conclusion that one of skill in the art would not be inclined to read the combination of references to teach the use of a non-directional input as claimed in claim 1 as Philips still requires the positioning of a cursor within the image which in turn requires directional input. Specifically, in this four-way combination of references, Nomura et al., Sage et al., Peters and Philips, each reference individually teaches the use of directional input.

Accordingly, claim 3 is believed to be in a condition for allowance in view of the combination of references. Claim 4 is believed to be allowable for the same reasons stated with respect to claim 3.

Claim 5 stands rejected based upon the same combination with Nomura et al. further being said to teach "that the controller is further adapted to generate a revised image based upon image information from the area of importance and to store the revised image (Col. 2, lines 53-59). The reference teaches the "holding means for temporarily holding a picture." However, it will be appreciated that the mere holding of a picture in a temporary storage location does not support the grounds for rejection. Specifically, Nomura et al. does not disclose any step wherein an image other than the image that is captured is stored or printed. The stored or printed image may have additional information in it but it is never said to be less than all of the original image as is clearly indicated in claim 1. Accordingly, the mere addition of Nomura et al.'s teaching of the storage of a complete but painted version of the image does not teach or suggest the steps claimed in claim 5.

Claim 6, is likewise rejected under the above cited combination and further on grounds that "Nomura et al. teach that the controller is further adapted to resample the revised image so that the revised image has image characteristics that correspond to the image characteristics of the original image (Col. 2, lines 60-66)". However, a review of these cited lines does not suggest that Nomura et al. discloses such resampling. Instead, lines 53-66 of Col. 2 of Nomura et al. states as follows:

> In addition, a graphic processing apparatus according to a 2nd aspect of the present invention comprises: manuscript-picture holding means for temporarily storing a manuscript picture; region extracting means for extracting a region to be painted with a color

from the manuscript picture temporarily stored in the manuscript-picture holding means; importance-degree-request receiving means for determining degrees of importance for a plurality of regions extracted by the region extracting means which degrees of importance are used as criteria for highlighting the individual regions each to be painted with a color; region-color determining means for determining region colors to be painted on the regions extracted by the region extracting means which region colors are differentiated from each other by differences in color attributes among said individual regions in accordance with said degrees of importance determined by the importance-degree-request receiving means for the regions each to be painted with a color; and output-picture generating means for generating an output picture for said manuscript picture temporarily stored in the manuscript-picture holding means by providing color attributes determined by the region-color determining means to said regions extracted by the region extracting means.

It is clear that there is no discussion of a resampling step in the cited lines. Accordingly, the rejection then interprets this section as follows: "The reference teaches about determining the degree of importance based upon the plurality of regions extracted which is analogous to sampling the image for image characteristics." This is inconsistent with Nomura et al. As is clearly indicated in the lines cited, the output picture is one that has already been modified in accordance with color attributes. The output image is an image ready for printing thus such an image no longer contains any "degree of importance" information.

Further, it will be appreciated that because Nomura et al. merely discloses the use of an image that is painted but not otherwise modified, there is no need for and no suggestion of a need for a step for resampling the image so that the image characteristics of the revised image has characteristics that correspond to the image characteristics of the original image.

In addition, the claim does not read on the idea of "sampling and instead, the claim uses the term "resample". "Resample" is a term of art in the field of image manipulation and, that is different than the term "sample" that conveys a different meaning. In this regard, it will also be appreciated that claim 6 reads that the controller is further adapted to resample the revised image to achieve a desired effect "so that the revised image has image characteristics that correspond to the image characteristics of the original image."

By way of comparison, the Office Action admits that such a disclosure is read to suggest a process of "determining the degree of importance based upon the plurality of regions extracted which is analogous to sampling the image for image characteristics." Accordingly, a prima facie case of obviousness cannot be met with respect to claim 6, in that the grounds for rejection establish that the conclusion reached in the Office Action is that the prior art is clearly different from what is claimed

6. Claim 7

With respect to claim 7, the Office Action contends that Sage et al. discloses a:

> start signal and an end signal generated in response to a user input action; and wherein the controller is adapted [to detect] the start signal and, in response thereto, to sequentially designate a different one of the set of portions of the original image and to cause the display to present an evaluation image showing each currently designated portion for a period of time, said sequence of designations ending when the end signal is generated, wherein the controller is further adapted to determine an area of importance in the original image based upon the portion that is designated when the end signal is generated (Col. 3, lines 5-11)

Column 3, lines 5-11 of Sage et al. state as follows:

> Therefore, as the computer operator turns about his position, the electronic compass provides directional signals of this movement such that the targeting computer can redraw the map display so that the radar images on the display are accurately represented with respect to the computer operator's orientation. Consequently, the computer operator will give accurate directional information to a gunner member of approaching aircraft so the gunner can be ready to assess the hostility of the approaching aircraft and fire the missile if appropriate.

Nothing in the cited lines of Sage et al. discloses either of a start signal or an end signal. Sage et al. simply indicate that the orientation of the map is redrawn so that the radar images presented thereon are accurately represented with respect to the computer operator's orientation. That is to say either that different images are presented based upon the directional input from the operator i.e., a north facing radar image or a south facing radar image or that, perhaps, that a surround radar image is rotated based upon the directional input from the computer operator. In either event, the office action itself admits that there is no

disclosure of a start signal or an end signal. The rejection must show what is known in the art. Here nothing about starting or stopping is shown. Thus, this does not constitute sufficient evidence necessary to support a prima facie case of obviousness.

Instead, the Office Action cites this as providing some "talk about signals that would cause the display to be updated." Assuming arguendo that Sage et al. does disclose of some "talk about signals that would cause the display to be updated" such a disclosure does not teach or suggest any of the following elements of claim 7:

A. wherein the non-directional signal comprises a start signal and an end signal generated in response to a user input action;

B. and wherein the controller is adapted to detect the start signal and, in response thereto, sequentially designate a different one of the set of portions of the original image; and

C. to cause the display to present an evaluation image showing each currently designated portion for a period of time, said sequence of designations ending when the end signal is generated,

D. wherein the controller is further adapted to determine an area of importance in the original image based upon the portion that is designated when the end signal is generated.

Accordingly, for the purpose of framing issues for Appeal, the Applicants respectfully request that the Examiner identify which of items A – D relevant to claim 7 are found in the cited lines of Sage et al.

In particular, it will be appreciated that claim 7 provides specific details that relates to what will be displayed in response to particular inputs. In the cited lines of Sage et al., it is presumed that something has caused the system to begin operating and that something causes it to end, but no structure or method step is disclosed on this point. The only input discussed in the cited lines is clearly a directional input. The directional input of Sage et al. is never disclosed as a start signal or as an end signal. Nor is there any reason to assume that one would design a hand held missile guidance system to start presenting image or to stop presenting images in response to mere motion as there is likely to be a substantial amount of motion when the device is not in active use or when it is desired that the unit be ready but not be in active use. Thus, there is a need a for something to

generate such start and stop signals and that something is not disclosed in Sage et al. The directional signals of Sage et al. cannot be interpreted as such.

Further, to the extent that Sage et al. is said to read on point C, it will be appreciated that there is no disclosure of causing the display to present an evaluation image showing each currently designated portion for a period of time, said sequence of designations ending when the end signal is generated. In fact, this would be contrary to Sage et al., which would desire immediate response to any change in the orientation of the display so that if the holder of the missile control system determines that there is a more urgent threat from a new direction, the holder could react immediately and one of ordinary skill in the art would also expect that the display would also react immediately.

Finally, Sage et al. does not disclose any embodiment wherein the controller is further adapted to determine an area of importance in the original image based upon the portion that is designated when the end signal is generated.

Accordingly, for these additional reasons it is respectfully submitted that no prima facie case has been established with respect to claim 7 and claim 7 is believed to be allowable.

*7. **Claims 8 - 13***

Claim 8 is also believed to be allowable in that the Office Action cites the above cited lines of Sage et al. and these lines do not disclose any of the following elements;

A. wherein the non-directional signal comprises a start signal and an end signal,

B. with the start signal being generated in response to a first user input action and an end signal being generated in response to a second user input action; and

C. wherein the controller is adapted to detect at least one start signal and, in response thereto, provisionally designate a different one of the set of portions of the original image and to cause the display to present an evaluation image that shows each provisionally designated portion,

D. wherein the controller is further adapted to detect the end signal and in response thereto, to determine an area of importance based upon the portion that is provisionally designated when the end signal is detected.

To the extent that this rejection is reasserted in any future office Action, the Applicants respectfully that this rejection be clarified with specific explanation as to how the cited lines of Sage et al. disclose each of elements A-D of claim 8.

Claims 9-12 are similarly believed to be allowable over the cited combination of Nomura et al., Sage et al., and Peters for the reasons stated above with respect to claim 1.

Claim 13 has been rejected over the cited combination and further because Peters allegedly discloses the additional elements of claim 13 at Col. 15, lines 40-45. These lines have been discussed with respect to claim 1 and have been shown to provide a statement of need as to what is required to prepare an image for use in evaluating an image's information content and further discuss the use of image processing techniques to achieve the goal of making images more understandable to a viewer. These lines clearly indicate that all images must be accommodated and that the processing "must be exhaustive and objective to avoid missing any existing detail."

The Office Action contends that "the reference teaches that the details of the image will be recognized and correlated with various image features which can be done using the magnified portion of the image." What is actually disclosed is a method for modifying the image that has three goals: removing noise from the image and enhancing detail so that when the image is enhanced for analysis (at some later time) it will be easier to identify detail in the image. In fact, it can be argued that the central purposes of Peters is to ensure that features are not lost during enlargement, thus, special processing is done to ensure that when an image is magnified, the magnification process will not mask certain image portions. The image enhancement technique is described as follows at Col. 17, lines 30-42:

> B. Implementation of the Image Information Enhancement Technique:
>
> The information extraction program in accordance with this invention creates an output image from two smoothed input images (or the original data set and one smoothed image). The smoothed images are preferably generated by the two-dimensional hysteresis smoothing program described above using two different cursor widths (but alternatively may be generated by a different pixel-accurate smoothing technique). The two input images must have the same number of rows and columns. The detail extraction subtracts the most smoothed

> image from the least smoothed image and then does linear contrast stretching on the result.

Apparently, then the two images that are subtracted are an original image and a "smoothed" image which are subtracted from each other in two ways. Such images are stated to have the same number of rows and columns. This does not permit one image to be enlarged versus another or that one portion of one of the images to be enlarged relative to each other.

Specifically, the Applicants direct the examiner to Col. 19, lines 44-62 which state as follows:

> The novel detail enhancement technique of this invention utilizes two-dimensional hysteresis processing for several unique enhancement purposes which are required for the accurate enhancement of image details and which are not addressed either by the noise management application of the technique or by any other commonly used processing techniques: pixel accurate extraction of spatial details with a defined and limited intensity range, and image-accurate scaling of detail intensity and determining of a single interactively defined output parameter for the enhancement. This image accurate "enhancement parameter" is chosen independently from the image content only in relation to the desired extent of detail enhancement. The detail enhancement filter has fundamental advantages over the conventional spatial processing principles (Oho filter, Sobel filter or homomorphic filters) since it uses a different, pixel accurate intensity processing principles for the selection, extraction and enhancement and which are independent of the image content.

> Significantly, the scaling of the resulting differential images to full display intensity range produces a differential hysteresis image having unique properties, i.e., they represent visually discrete differential intensity pattern of additive character. From most images, irrespectively of their original, only a limited number of basic visual patterns can be extracted which represent all the contrast information present in the data, e.g., a CCD (charge coupled device) video portrait image, atomic force microscopy image, which, e.g., provides data in the 14-bit range, a CT image (computerized tomography), which, e.g., provides data in the 11-bit range, and a radiogram, which, e.g., provides data in the 12-bit range.

The advantages of this scaling are further discussed in greater detail at Col. 30, lines 41-60.

> Most instrumental precision information of maximum contrast resolution is found only in a fraction of the data's intensity range and is often too low to be visually recognizable. This pertinent information can be made visible as enhanced distinct images or can be contrast enhanced within the original images by adding the extracted differential hysteresis pattern components to the original images. The enhancement dramatically improves the image resolution of any imaging instrument and guaranteed maximum efficacy in image evaluation. For the first time and without requiring special knowledge of digital image processing or computer operation, digital image processing, the present invention provides an interactive process for objective and exhaustive visual real-time access to any level of image resolution including the maximum sensor resolution using only one single parameter (i.e., the differential hysteresis range). Importantly, this process allows visualization of any image at the resolution level of the image sensor, rather than the eye, extending the "visual recognition level" to the acquisition level of the imaging device.

Thus, there does not appear to be any point at which Peters discusses a method for making an enhanced image that includes any of the following elements:

A. wherein the user input system is adapted to receive a magnification input and to generate a magnification signal in response thereto and

B. wherein the controller is adapted to use more than one set of portions of image information from the original image with each set having at least one portion therein that is sized differently from at least one portion in another set of the more than one set of portions, and

C. with the controller selecting one of the more than one set based upon the magnification input.

Specifically, there is no disclosure of a set of portions, more than one set of portions or the selection of a set of portions based upon a magnification input. Here again, the Applicants respectfully request that the Examiner identify, for the purposes of clarifying matters for appeal, which of elements Peters are specifically believed to read upon elements A – C.

II. Claims 14 – 20 Are Allowable over the Cited Combinations.

1. Claim 14 is allowable over Nomura et al. and Sage et al.

Claim 14 has been amended and as amended makes explicit that which was implicit in the claim as filed. As amended claim 14, claims:

> A display device comprising:
> a source of an original image;
> a display;
> a user input system adapted to generate an advance signal <u>that only indicates that a single user input action has been taken</u> and a save signal; and
> a controller adapted to detect the advance signal and, in response thereto, to cause the display to present a sequence of portion evaluation images each representing the image content of one of a set of different portions of the original image with the predetermined set of portions including at least one portion that is non-central with respect to the original image;
> wherein the controller determines an area of importance in the original image based upon the portion of the original image presented when the controller detects the save signal.

This is not taught or suggested by either of Nomura et al. or Sage et al. alone or in combination. Specifically, Nomura et al. has been shown above to require a user to use a cursor of some type to select a portion of an image. This inherently requires that the input signal include a positional and/or directional component. Sage et al. further requires a user input system that requires that the user redirect a computer to take a user input action. Sage et al. specifically requires the use of a compass and sensor to indicate the direction of the computer and the input therefrom must include directional components in order to operate the Sage et al. system.

Further, the Office Action contends that Sage et al. discloses a system wherein the "controller determines an area of importance in the original image based upon the portion of the original image presented when the controller detects the save signal (Sage et al. Col. 3, lines 5-10). However, these lines of Sage et al. merely state "therefore as the computer operator turns about his position, the electronic compass provides directional signals of this movement such that the targeting computer can redraw the map display so that the radar images on the display are accurately represented with respect to the display operator's orientation." There is no discussion in the cited lines of Sage et al. that suggest saving any image. Accordingly, the Applicants respectfully suggest that a prima

facie case cannot be made out with respect to this element based upon the teachings of the cited portions of Sage et al.

Sage et al. also does not suggest the presentation of a sequence of portion evaluation images in response to the advance signal. Importantly, in Sage et al. the images presented on the screen are determined by the directional orientation of the computer system. If this orientation does not change, there will be no change in what is displayed. However, as claimed in claim 14, a sequence of portion evaluation images will be presented in response to the user input action causing the advance signal. That is one signal – the advance signal occasions the display of many different portion images. This is not disclosed in Sage et al.

In the event that this ground of rejection as to this element of the claim is maintained in any future office action, the Applicants respectfully request clarification as to how the cited lines of Sage et al. support the conclusion of obviousness as to this element.

Accordingly, claim 14, is believed to be allowable over the cited combination.

Claims 15-20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. (US 5,877,772) in view of Sage et al. (US 5,672,840) and further in view of Peters (US 5,715,334) and Philips (US 5,715,334). These claims ultimately depend from claim 14 and are therefore each believed to be in a condition for allowance for the reasons stated with respect to claim 14.

With respect to claim 15, Philips is further said to provide a teaching of an original image that is captured by an image capture system. However, this teaching does not address any of the other deficiencies cited above with respect to the combination of Nomura et al, Sage et al. and Peters as cited above.

Further, Philips describes a system that uses graphical user interfaces to drive operation of the system, see for example, GUI 515 Cols. 19 and 20. GUI 515 uses a cursor 1031 that is positioned – directionally relative to particular portions of the screen. Thus, Philips, like Peters, Nomura et al. and Sage et al. before it also requires the use of a user input system that requires a user input signal with a directional component. Thus it is respectfully submitted that one of ordinary skill in the art would be inclined to do this rather than to use a signal that merely indicates that a user input action has been taken.

Further, it will be appreciated that using Nomura et al., Peters or Philips, it is necessary to detect a plurality of positional input signals to determine a user's designation of an area of an image. In Philips it is necessary to monitor movement of mouse to position cursor as the user takes a set of actions necessary to move the cursor to a desired start position of the area and then indicates the start position (Col. 22, lines 12-27). The "edit-region-request receiving unit 6" of Nomura et al. similarly requires monitoring of a plurality of user inputs to move a cursor around a screen and select an area. Peters, as discussed above, generally addresses methods for modifying a whole image to allow enlargement. Peters does however, discuss the use of a mouse as an input device and therefore also suggests that directional input is necessary.

III. Claims 21 – 33.

Claims 21-23 and 26-46 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. and Sage et al. With respect to claim 21, the Office Action again relies upon Nomura et al. for a teaching of a source of an original image and a display and then relies on Sage et al., Col. 3, lines 5-10 to teach a user input system adapted to generate a non-directional advance signal in response to a user input action. For the reasons stated above in part I. B. the Applicants respectfully submit that the cited lines of Sage et al. do not disclose such a feature and for this reason there has been no showing of a prima facie case as to claim 21.

Further, the Office Action contends that Nomura et al. at Col. 8, lines 54-57 show a controller "adapted to define a number of portion evaluation images each comprising images from a portion of the original image with each portion being located relative to a predefined anchor point within the image."

The cited lines of Nomura et al. merely disclose that regions of the scanned image can be highlighted to indicated an importance of the color in each region. Nomura et al. does not suggest the use of predefined anchor points. The Office Action concedes this but notes that:

> although the reference (Nomura et al.) doesn't mention anchor points explicitly it does talk about highlighting states of region based upon degrees of importance. Anchors are well known in the art to mark specific locations and thus at the time of the invention it would have been obvious to one ordinarily skilled in the art to use highlighting as taught by Nomura et al. to use as an anchor.

It will be appreciated that the Examiner has failed to provide any evidence supporting the contention that it was well known to use anchor points. The Applicants note, however, that what is claimed is not the use of any anchor point but rather the use of "predefined anchor points." Further, the unsupported statement that anchors are well known in the art to designate specific locations does not create grounds supporting the prima facie case as the unsupported statement does not address the question of the use of predetermined anchor points. The system of Nomura et al. does not discuss either the use of anchor points or the use of predefined anchor points. Instead, in Nomura et al. highlighted areas are defined by the user using the directional input from the mouse to guide a cursor. Nomura et al. utterly fails to suggest that there are some predefined anchor points in the image from which areas of importance can be defined. For this reason, the grounds for rejection fail to establish a prima facie case of obviousness as they fail to establish that this claim element is known in the art.

The rejection of claim 21 further contends that Sage et al. at Col. 3, lines 5-10 discloses a controller that is additionally being adapted to determine from a non-directional advance signal, a user designation of a portion of the original image and to use the designation to determine an area of importance in the original image. These lines have been discussed in detail above and it has been shown that these lines do not disclose such a thing. Instead, they merely show the reorientation of an image or the selection of a new image based upon a directional input. Accordingly, for this reason as well, the grounds for rejection fail to establish a prima facie case of obviousness as they fail to establish that this claim element is known in the art.

With respect to claim 22, the Office Action contends that Nomura et al. teaches at Col. 11, line 44:

> "that the user input system is adapted to receive a shape designation input and generate a shape signal and wherein the controller determines the shape of the portion within the original image based upon the shape signal. The reference teaches about the region specified within an image by a region extraction unit as specified by the user. A shape is known to be a two dimensional or implied two-dimensional area defined by line changes in value or color. Therefore it is possible to use the region extraction unit as taught by Nomura et al. to receive a shape designation and to generate a shape designation signal.

However. while Col. 11, line 44 discloses the existence of an "edit-region-request receiving unit 6." It is not necessary to speculate on the features and capabilities of this unit as is done in the rejection. Nor is such speculation permissible as it attempts to incorporate a definition of the word shape into the analysis without first determining how that word is used in the specification.

The specification of Nomura et al. however provides a very concise definition of what an "edit-region request receiving unit 6" is and does. This is discussed in Col. 13, lines 1-21 as follows:

> For example, when it is desired to paint a region of a text picture in the manuscript read in this way with a color, a text picture to be edited is displayed on a window for specifying regions each to be painted with a color shown in FIG. 3. The user then makes a request to paint regions with colors by means of a pointing device. The edit-region-request receiving unit 6 carries out processing to receive the coloring request made by the user.
>
> The edit-region-request receiving unit 6 is a system element which receives a request to paint a region on the manuscript with a color from the user (that is, the composer of the text). An example of a window 30 for specifying regions each to be painted with a color to the edit-region-request receiving unit 6 is shown in FIG. 3. When the user specifies a region to be painted with a color in the manuscript, the window 30 for specifying a region to be painted with a color is displayed on the screen. A scanned picture 31 is displayed on the window 30. Then, regions 32 to 37 to undergo coloring/editing are specified by a pointing cursor 38 which is moved by operating a mouse. To put it in detail, the edit-region-request receiving unit 6 displays the scanned picture 31 stored temporarily in the text-picture memory unit 11 on the window 30 for specifying regions each to be painted with a color and the user moves the pointing cursor 38 on the screen to the regions 32 to 37 of the scanned picture 31 by operating a pointing device such as a mouse or a touch pen. The user can make a request to select one region or a plurality of regions from the regions 32 to 37 to be edited.

Thus, Nomura et al. merely discloses the use of a directional input system-a pointing device which can be a cursor which is moved by a mouse or a pen to directly identify a region. There is no disclosure of a shape designation per se. Further, there is no disclosure of the designation of a shape signal per se or the use of a designated shape to determine the portion of the original image in combination with the use of a predetermined anchor point.

Claim 23 stands rejected on the same grounds as claim 21 and is therefore believed to be allowable for the same reasons as claim 21, and further on grounds that "Nomura et al. teach that the controller is further adapted to generate area of importance data based upon the designated portion and to associate the area of importance data with the original image. However, as has been established above, Nomura et al. does not teach that the controller is adapted to generate area of importance data but rather determine degree of importance data that is associated with particular portions of the image only for use in generating a modified output image.

Claims 24 and 25, stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. (US 5,877,772) in view of Sage et al. (US 5,672,840) and further in view of Peters (US 5,715,334) as applied to claims 1, 2, above and further in view of Phillips (US 6,504,552).

To the extent that these claims have been rejected in view of the above-cited combination of Nomura et al., Sage et al. and Peters, the Applicants respectfully reassert the arguments presented above. Further, the Applicants note that Phillips has been cited for the proposition that Philips shows a step of storing area of importance metadata in association with an image. Specifically, Philips at Col. 3, lines 12-18 is cited on this point. These lines state as follows:

> In one embodiment, such record of effects editing is a data structure of metadata. In one implementation, the metadata includes resolution-independent positional information with respect to the effects, descriptive information with respect to the effects, and source frame information. In one aspect, such descriptive information, positional information, or both, is pixel-based.

It will be appreciated that the term area of importance is not used. Nor does this term appear anywhere in Philips. Philips instead describes storing data reflecting a series of edits as metadata. However, claim 21 does not claim making any edits to an image.

Further, Philips and Nomura et al. in combination would teach away from claim 23 and 24 as Nomura et al. shows the concept of adding painting instructions (edits) to an image and in combination with Philips could be read to disclose storing a record of the edits. However, here, in claim 24, there is simply

no teaching of an edit being made to the image. Rather, segments of the image are previewed using a non-directional input, an area of importance is determined from this and the area of importance is stored.

The technical effect of claim 24 is that the common user action of verifying that the appearance of a subsection of a captured image is made simpler in that directional inputs are not required. Further, an area of interest is identified that follows with the original image and is accessible to one who has access to the original image. To force the user to identify an area of the image using the editing type area designations of Nomura et al, and Philips is therefore not consistent with what is claimed claim 24 and is inconsistent with the technical effect that is claimed.

Further, Philips discloses the use of a mouse or other positioning scheme to position a cursor relative to the image displayed. Thus, Philips provides further support for the conclusion that one of skill in the art would not be inclined to read the combination of references to teach the use of a non-directional input as claimed in claim 1 as Philips still requires the positioning within the image which in turn requires directional input. Specifically, in this four-way combination of references, Nomura et al., Sage et al., Peters and Philips, each reference individually teaches the use of directional input.

Accordingly, claim 24 is believed to be in a condition for allowance in view of the combination of references. Claim 25 is believed to be allowable for the same reasons stated with respect to claim 24.

Claim 26 stands rejected in view of the combination cited against Claim 22 from which it depends, claim 26 is therefore believed to be allowable for the reasons states with respect to claims 21 and 22.

Claim 27 claims the display device of claim 26 wherein the controller is further adapted to resample the revised image so that the revised image has image characteristics that correspond to the image characteristics of the original image. Claim 27, is apparently likewise rejected under the above cited combinations cited against the claims upon which claim 27 ultimately depends including claim 26, claim 22 and claim 21 and further on grounds that "Nomura et al. teach that the controller is further adapted to resample the revised image so that the revised image has image characteristics that correspond to the image characteristics of the original image (Col. 2, lines 60-66)"

The teachings drawn from Claim 27 do not address the deficiencies identified above with respect to the combinations cited against claims 26, 22, and 21 and for the reasons stated above claim 27 is therefore believed to be allowable.

Claim 27 is further believed to be allowable in that a review of the portions of Nomura et al. cited as support for rejecting claim 27 do not disclose such resampling. Instead, lines 53-66 of col. 2 of Nomura et al. state as follows:

> In addition, a graphic processing apparatus according to a 2nd aspect of the present invention comprises: manuscript-picture holding means for temporarily storing a manuscript picture; region extracting means for extracting a region to be painted with a color from the manuscript picture temporarily stored in the manuscript-picture holding means; importance-degree-request receiving means for determining degrees of importance for a plurality of regions extracted by the region extracting means which degrees of importance are used as criteria for highlighting the individual regions each to be painted with a color; region-color determining means for determining region colors to be painted on the regions extracted by the region extracting means which region colors are differentiated from each other by differences in color attributes among said individual regions in accordance with said degrees of importance determined by the importance-degree-request receiving means for the regions each to be painted with a color; and output-picture generating means for generating an output picture for said manuscript picture temporarily stored in the manuscript-picture holding means by providing color attributes determined by the region-color determining means to said regions extracted by the region extracting means.

It is clear that there is no discussion a resampling step in the cited lines. Accordingly, the rejection then interprets this section as follows: "The reference teaches about determining the degree of importance based upon the plurality of regions extracted which is analogous to sampling the image for image characteristics." This is inconsistent with Nomura et al. As is clearly indicated in the lines cited, the output picture is one that has already been modified in accordance with color attributes. The output image is an image ready for printing thus such an image no longer contains any "degree of importance" information.

Further, it will be appreciated that because Nomura et al. merely discloses the use of an image that is painted but not otherwise modified, there is no need for and no suggestion of a need for a step for resampling the image so that the image characteristics of the revised image has characteristics that correspond to the image characteristics of the original image.

In addition, it will be appreciated that the claim does not read on the idea of "sampling." It will be appreciated that the term "resample" is a term of art in the field of image manipulation and further that the term "sample" is different therefrom. In this regard it will also be appreciated that claim 27 reads that the controller is further adapted to resample the revised image "so that the revised image has image characteristics that correspond to the image characteristics of the original image." As compared to the Office Action, which reads the disclosure to suggest the "determining the degree of importance based upon the plurality of regions extracted which is analogous to sampling the image for image characteristics." Accordingly, a prima facie case of obviousness cannot be met with respect to claim 27, in that the grounds for rejection clearly establish that the conclusion reached in the Office Action is that the prior art is different from what is claimed.

Claim 28 depends from claim 22 and has been rejected over the combination of references cited against claim 22 and claim 21 from which claim 22 depends and further because Peters allegedly discloses the additional elements of claim 28 at Col. 15, lines 40-45. These lines have been discussed with respect to claim 1 and have been shown to provide a statement of need as to what is required to prepare an image for use in evaluating an image's information content and further discuss the use of image processing techniques to achieve the goal of making images more understandable to a viewer. These lines clearly indicate that all images must be accommodated and that the processing "must be exhaustive and objective to avoid missing any existing detail."

The Office Action contends that "the reference teaches that the details of the image will be recognized and correlated with various image features which can be done using the magnified portion of the image." What is actually disclosed is a method for modifying the image that has three goals: removing noise from the image and enhancing detail so that when the image is enhanced for analysis (at some later time) it will be easier to identify detail in the image. In fact, it can be argued that the central purposes of Peters is to ensure that features are not lost during enlargement, thus, special processing is done to ensure that when an image is magnified, the magnification process will not mask certain image portions. The image enhancement technique is described as follows at Col. 17, lines 30-42:

B. Implementation of the Image Information Enhancement Technique

> The information extraction program in accordance with this invention creates an output image from two smoothed input images (or the original data set and one smoothed image). The smoothed images are preferably generated by the two-dimensional hysteresis smoothing program described above using two different cursor widths (but alternatively may be generated by a different pixel-accurate smoothing technique). The two input images must have the same number of rows and columns. The detail extraction subtracts the most smoothed image from the least smoothed image and then does linear contrast stretching on the result

Apparently, then the two images that are subtracted are an original image and a "smoothed" image which are subtracted from each other in two ways. Such images are stated to have the same number of rows and columns. This does not permit one image to be enlarged versus another or that one portion of one of the images to be enlarged relative to each other.

Specifically, the Applicants direct the examiner to Col. 19, lines 44-62 which state as follows:

> The novel detail enhancement technique of this invention utilizes two-dimensional hysteresis processing for several unique enhancement purposes which are required for the accurate enhancement of image details and which are not addressed either by the noise management application of the technique or by any other commonly used processing techniques: pixel accurate extraction of spatial details with a defined and limited intensity range, and image-accurate scaling of detail intensity and determining of a single interactively defined output parameter for the enhancement. This image accurate "enhancement parameter" is chosen independently from the image content only in relation to the desired extent of detail enhancement. The detail enhancement filter has fundamental advantages over the conventional spatial processing principles (Oho filter, Sobel filter or homomorphic filters) since it uses a different, pixel accurate intensity processing principles for the selection, extraction and enhancement and which are independent of the image content.
>
> Significantly, the scaling of the resulting differential images to full display intensity range produces a differential hysteresis image having unique properties, i.e., they represent visually discrete differential intensity pattern of additive character. From most images, irrespectively of their original, only a limited number of basic visual patterns can be extracted which represent all the contrast information present in the data, e.g., a CCD (charge coupled device) video portrait image, atomic force microscopy

> image, which, e.g., provides data in the 14-bit range, a CT image (computerized tomography), which, e.g., provides data in the 11-bit range, and a radiogram, which, e.g., provides data in the 12-bit range.

The advantages of this scaling are further discussed in greater detail at Col. 30, lines 41-60:

> Most instrumental precision information of maximum contrast resolution is found only in a fraction of the data's intensity range and is often too low to be visually recognizable. This pertinent information can be made visible as enhanced distinct images or can be contrast enhanced within the original images by adding the extracted differential hysteresis pattern components to the original images. The enhancement dramatically improves the image resolution of any imaging instrument and guaranteed maximum efficacy in image evaluation. For the first time and without requiring special knowledge of digital image processing or computer operation, digital image processing, the present invention provides an interactive process for objective and exhaustive visual real-time access to any level of image resolution including the maximum sensor resolution using only one single parameter (i.e., the differential hysteresis range). Importantly, this process allows visualization of any image at the resolution level of the image sensor, rather than the eye, extending the "visual recognition level" to the acquisition level of the imaging device.

Thus, there does not appear to be any point at which the Peters discusses a method for making an enhanced image that includes any of the following elements:

A. wherein the user input system is adapted to receive a magnification input and to generate a magnification signal in response thereto and

B. wherein the controller is adapted to use more than one set of portions of image information from the original image with each set having at least one portion therein that is sized differently from at least one portion in another set of the more than one set of portions, and

C. with the controller selecting one of the more than one set based upon the magnification input.

Specifically, there is no disclosure of a set of portions, more than one set of portions or the selection of a set of portions based upon a magnification input. Here again, the Applicants respectfully request that the Examiner identify, for the purposes of clarifying matters for appeal, which of the elements of Peters specifically show these elements.

IV. Claims 34 – 43

Claims 34 - 43 stand rejected under 35 U.S.C. 103 as being unpatentable over Nomura et al. in view of Sage et al. and Peters.

Specifically, Peters is said to disclose a method step of defining a set of different portions in the original image, with each portion comprising than all of the original image and at least one of the portions being non-central in the original image at Col. 15, lines 40-45. However, these lines have been discussed in great detail above in section I.1.C. and it has been established that these lines do not stand for this proposition. Accordingly, a prima facie case of obviousness has not been established on this ground alone.

Further, the Final Office Action contends that Sage et al. discloses a step of detecting a non-directional user input during presentation of the evaluation image. Col. 3, lines 5-10 of Sage et al. have been cited for this proposition. However, these lines have been discussed in great detail above in section I.1.B. above and it will be appreciated from the previous discussion that these lines of Sage et al. do not appear to support the prima facie case of obviousness presented herein.

Finally, Peters, Col. 15, lines 40-45 have also been cited as disclosing the step for designating one of the set of portions in response to each detected non-directional user input action, presenting a portion evaluation image that corresponds to the designation portion with the portion evaluation image showing the currently designated portion having magnification that is greater then the magnification that the designated portion has when the currently designated portion is presented as a part of the original image and determining an area of importance based upon the designated portion. However, these lines have been discussed in great detail above in section I.1.C. and it has been established that the do not stand for this proposition.

Accordingly, it is respectfully submitted that a prima facie case of unpatentability has not been established with respect to claim 34 and all claims that depend therefrom are believed to be allowable.

Claim 35 is rejected on grounds that Nomura et al. disclose detecting a reset action at Col. 13, lines 12-20. However, Col. 13, lines 1-21 state as follows:

> For example, when it is desired to paint a region of a text picture in the manuscript read in this way with a color, a text picture to be edited is displayed on a window for specifying regions each to be

> painted with a color shown in FIG. 3. The user then makes a request to paint regions with colors by means of a pointing device. The edit-region-request receiving unit 6 carries out processing to receive the coloring request made by the user.
>
> The edit-region-request receiving unit 6 is a system element which receives a request to paint a region on the manuscript with a color from the user (that is, the composer of the text). An example of a window 30 for specifying regions each to be painted with a color to the edit-region-request receiving unit 6 is shown in FIG. 3. When the user specifies a region to be painted with a color in the manuscript, the window 30 for specifying a region to be painted with a color is displayed on the screen. A scanned picture 31 is displayed on the window 30. Then, regions 32 to 37 to undergo coloring/editing are specified by a pointing cursor 38 which is moved by operating a mouse. To put it in detail, the edit-region-request receiving unit 6 displays the scanned picture 31 stored temporarily in the text-picture memory unit 11 on the window 30 for specifying regions each to be painted with a color and the user moves the pointing cursor 38 on the screen to the regions 32 to 37 of the scanned picture 31 by operating a pointing device such as a mouse or a touch pen. The user can make a request to select one region or a plurality of regions from the regions 32 to 37 to be edited.

Clearly there is no discussion of a "reset action." Nor does there appear to be adequate support for the Examiner's conclusion that resetting is a form of editing. Further, it will be appreciated that as claimed, the image is not edited thus an editing action is not relevant to what is claimed.

With respect to claim 37, Peters is said to disclose the step of defining a set of different portions in the original image that comprises the steps of analyzing the image content of the original image and defining portions based upon image analysis at Col. 15, lines 34-39 which is said to disclose three ways of image processing involving the image contents including: 1. detail contrast enhancement, 2. digital enlargements, 3. noise management. However, these lines have been discussed extensively above in section I.1.C. It will be apparent from that discussion that Peters does not disclose the use of any of these processes for analyzing the image content of the image for the purpose of defining a set of different portions in the original image with such portions being used to provide evaluation images as claimed in claim 34 from which claim 37 depends.

With respect to claim 38, Peters is said to teach that the step of analyzing the image content of the original image comprises determining which portions of the original image are in focus, and defining the portions of the set of portions based upon the focus analysis (Col. 5, lines 32-43). These lines are a part of a larger paragraph describing ways in which Peters allows details of an image to be enhanced – that is small sections of one image can be modified so that they are more readily apparent within the image. Specifically the section regarding image enhancement states as follows:

> In general, "detail enhancement" refers to an enhancement of the contrast of image details and must include the spatial details as well as the intensity details in order to maintain the image character (image accuracy). "Spatial details" constitute intensity variations over a short distance (a few pixels long), and "intensity details" constitute intensity variations of a few intensity steps independent of their spatial extent. In addition, a desirable enhancement procedure must preserve the unrestricted possibility of image quantitation not only of the spatial content but also of the intensity content; that means the image processing technology must maintain the accuracy of the image at the level of individual pixel's intensity. Such pixel accurate intensity processing (PAIP) for image enhancement is not possible with any conventional technology, but is achievable utilizing the detail enhancement processing technique of the present invention which can fulfill the latter requirements and which is therefore inherently suitable (trustworthy) for scientific and medical applications. The basis for its spatial accuracy is the utilization of pixel-accurate intensity processing; which preferably utilize the "smoothing" technique discussed above. Its processing accuracy results from the capability of the "enhancement parameter" (significant intensity range) of selecting "intensity information" from the whole image at both levels of spatial and intensity details. Its application power results from the possible visual appreciation of the spatial and intensity changes of selected information by linear contrast stretching to the full intensity range of human visual perception, and from the possibility of performing the enhancement in "near-real time" which provides the selected information at a time interval similar or equal to the processing speed of human visual recognition taking full advantage of the visual capabilities for image evaluation and communication.

They do not appear to disclose any form of focus analysis or the step of defining portions of an image for use in a set of portions of the image. The Office Action attempts to avoid this deficiency by the following logical construct:

> The reference teaches a way of analyzing an image based on the full intensity of the human visual range and since the maximum clarity or distinctness of an image rendered by an optical system is known as focus, it is possible to use the image analysis method of Peters to do the focus analysis.

It will be appreciated that even if this construct is true, the office action fails to establish that this cited portion of Peters teaches the step of defining the portions of the set of portions of the original image as claimed in claim 38 for use in defining evaluation images as claimed in claim 38 or the use of such portions for defining evaluation images as claimed in the portion of claim 38 that depends from claim 34. Accordingly, for this reason alone, a prima facie case has been established for this element of claim 38 and therefore it is not possible that this ground for rejection establishes a prima facie case.

Further, the logic of this construct is internally inconsistent. There is no necessary correlation between intensity and focus, and a full range of visual intensity can be contained within an image having very little focus. This is clear in that the definition of focus provided therein does not even mention intensity.

Finally, it will be appreciated that this construct ignores the teachings of Peters which is to use the described image processing methods modify an image to provide greater enhancement of details, not to define portions of the image for use in defining evaluation images.

With respect to claim 39, the Office Action contends that Nomura et al. at Col. 8, lines 54-57 shows a controller "adapted to define a number of portion evaluation images each comprising images from a portion of the original image with each portion being located relative to a predefined anchor point within the image."

The cited lines of Nomura et al. merely disclose that regions of the scanned image can be highlighted to indicated an importance of the color in each region. Nomura et al. does not suggest the use of predefined anchor points. The Office Action concedes this but notes that:

> although the reference (Nomura et al.) doesn't mention anchor points explicitly it does talk about highlighting states of region based upon degrees of importance. Anchors are well

known in the art to mark specific locations and thus at the time of the invention it would have been obvious to one ordinarily skilled in the art to use highlighting as taught by Nomura et al. to use as an anchor.

It will be appreciated that the Examiner has failed to provide adequate support for the contention that it was well known to use anchor points. Further, the unsupported statement that anchors are well known in the art to designate specific locations does not create grounds supporting the prima facie case as the unsupported statement does not address the question of the use of predetermined anchor points. The Applicants note however that what is claimed is not the use of any anchor point but rather the use of "predefined anchor points." The system of Nomura et al. does not discuss either the use of anchor points or the use of predefined anchor points. Instead, in Nomura et al. highlighted areas are defined by the user using the directional input from the cursor. Nomura et al. utterly fails to suggest that there are some predefined anchor points in the image from which areas of importance can be defined. For this reason, the grounds for rejection fail to establish a prima facie case of obviousness as they fail to establish that this claim element is known in the art.

With respect to claim 40, the Office Action contends that Peters:

> teaches that the different portions of the original image comprises the steps of analyzing information used in a capture step in which the original images captured to define the step of portions (Col. 18, lines 21-29). The reference mentions selective extraction of details and this teaching can be used to analyze the original image.

This however is not what is claimed. What is claimed is the method of claim 34 wherein the step of defining a set of different portions in the original image comprises the steps of analyzing information used in a capture step in which the original image is captured to define a set of portions. Accordingly, information that used to capture images not the image is analyzed to determine portions of the image. The image per se is not analyzed. Thus, the Office Action fails to state a prima facie case of unpatentability with respect to claim 40.

With respect to claims 41, 42 and 43, are similarly believed to be patentable over the cited references in that not one of the grounds for rejection establishes that any of the references alone or in combination determines portions

of the original image based upon the claimed detected condition with such portions being used to define portions for use in evaluation images.

V. Claims 44 – 46

Claim 44 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. in view of Sage et al. and Peters. The Applicants respectfully submit that claim 44 is allowable over this combination for the same reasons cited with respect to claim 14. Further, claim 45 is believed to be allowable for the reasons stated in section I.1.B. Finally, claim 46 is believed to be allowable in that Sage et al. also does not suggest the presentation of a sequence of portion evaluation images in response to the advance signal. Importantly, in Sage et al. the images presented on the screen are determined by the directional orientation of the computer system. If this orientation does not change, there will be no change in what is displayed. However, as claimed in claim 46, a sequence of portion evaluation images will be presented in response to the user input action causing the advance signal. That is one signal – the advance signal occasions the display of many different portion evaluation images. This is not disclosed in Sage et al.

It is respectfully submitted, therefore, that in view of the above amendments and remarks, that this application is now in condition for allowance, prompt notice of which is earnestly solicited.

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